Translation

PATENT COOPERATION TREATY

PCT/EP2003/012803

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0000054101	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/012803	International filing date (*day/month/year*) 17 November 2003 (17.11.2003)	Priority date (*day/month/year*) 28 November 2002 (28.11.2002)
International Patent Classification (IPC) or national classification and IPC C09B 35/38		
Applicant BASF AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 10 May 2004 (10.05.2004)	Date of completion of this report 08 September 2004 (08.09.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/012803

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-9, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 1-6, filed with the letter of 27 August 2004 (27.08.2004)

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☒ the claims, Nos. 7-8

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

With the letter of 26 August 2004, the applicant submitted an amended set of claims in which the original claims 7 and 8 had been deleted. The amendments are admissible within the meaning of PCT Article 19(2) and PCT Article 34(2)(b). Additionally, the deletion of claims 7 and 8 overcomes the objections raised in the previous report with respect to a lack of novelty and a lack of unity of invention.

The application now relates to a production method for a liquid formulation of salts of sulfonic acid azo dyes, comprising:

(a) producing vesuvin from m-phenylene diamine;

(b) coupling an at least equimolar amount of diazotized amino aryl sulfonic acids H_2N-Ar-SO_3H (I) to vesuvin without intermediately isolating the vesuvin and

(c) isolating the dyes in their acidic form and subsequently dissolving them in aqueous bases (claims 1-6).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 03/12803

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims	1-6	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO

2. Citations and explanations

1. The present set of claims does not satisfy the requirements of PCT Article 6 for the reasons that follow.

Claim 1 relates to a method that comprises the production of vesuvin from m-phenylene diamine and its further use without intermediate isolation (claim 1, process steps a and b). However, in example 1 of the application (page 6), vesuvin bases are used and thus, contrary to the wording of claim 1, are not produced from m-phenylene diamine and further reacted without intermediate isolation. Therefore, claim 1 is not substantially supported by the description (PCT Article 6).

2. Reference is made to the following documents:

D1: JP 61 296069 A, 26 December 1986, mentioned in the application, and CHEMICAL ABSTRACTS, Vol. 107, No. 6, 1987, abstract no. 41689c

D2: DE 46 804 C, 27 February 1889, mentioned in the application

D3: BE 631 379 A, 16 August 1963.

3. Novelty

Document **D1** discloses production methods for liquid formulations of salts of sulfonic acid azo dyes by coupling amino aryl sulfonic acids (I) with C.I. Basic Brown 1, which is also known as vesuvin. I addition, sodium naphthionate, for example, is diazotized, the diazonium salt is treated at 10°C with C.I. Basic Brown 1, water, polyethylene glycol and urea, the pH value is adjusted to 8 with triethanolamine and the mixture is diluted with water at 30°C. The solution obtained in this way is well-suited for dying paper or leather and is stable in storage for six months (D1, English translation, "working example 1"). Furthermore, document **D1** discloses the production of said liquid formulations by releasing and isolating the sulfonic acid azo dyes from the corresponding sodium salt using hydrochloric or sulfuric acid and then dissolving them in aqueous bases (D1, English translation, page 5, paragraph 2 and "working example 2").

Formally, the method according to the present claim 1 is novel with respect to document **D1** because the combination of method steps (a), (b) and (c) is not explicitly disclosed in **D1**. However, the production of vesuvin from m-phenylene diamine and its further reaction without intermediate isolation according to the present method steps (a) and (b) is also not substantiated in the present application (see point 1 of the present report). Thus the actual teaching of the present application differs from the teaching of **D1** in that vesuvin is coupled with a diazotized amino aryl sulfonic acid (I) and the diazo dye is intermediately isolated in its acidic form, whereas according to **D1** the diazo dye either is not isolated ("working example

1") or is obtained from the sodium salt of the diazo dye ("working example 2").

Document **D2** describes the coupling of Bismarck Brown, which is also another name for vesuvin, with diazo naphthalene sulfonic acid. After the coupling is completed, the mixture is alkalized with a soda solution, brought to a boil, at which point the dye dissolves, and filtered, and the dye is precipitated by salting out. The claimed method is novel with respect to **D2** because the dye is intermediately isolated in its acidic form.

Document **D3** relates to a liquid formulation of salts of sulfonic acid azo dyes with particular additives (see page 3). However, **D3** does not explicitly disclose liquid formulations of salts of sulfonic acid azo dyes that are based on vesuvin, and so **D3** is not relevant in the evaluation of the novelty of the present application.

Therefore, the subject matter for which protection is sought in the claims is novel with respect to documents **D1** to **D3**.

4. Inventive Step

Document **D1** already describes production methods for liquid formulations of sulfonic acid salts of azo dyes based on vesuvin, said liquid formulations either being produced by coupling diazotized amino sulfonic acids (I) with vesuvin without intermediate isolation of the azo dyes in their acidic form or being obtained by dissolving in aqueous bases via the azo dyes that are released from the corresponding sodium salts and isolated. The present method differs from those

according to **D1** in that vesuvin is coupled with a diazotized amino aryl sulfonic acid (I), the diazo dye formed in this way is intermediately isolated in its acidic form and is subsequently dissolved in aqueous bases. As a result of the intermediate isolation, the azo dye can be freed of its salt load in a simple manner (see application, page 3, lines 29-34 and page 6, lines 25-28; example 1).

Proceeding from document **D1** as the closest prior art, the technical problem addressed by the application can be seen as that of providing an improved production method for liquid formulations of salts of sulfonic acid azo dyes. Said problem appears to be solved by the intermediate isolation of the diazo dye in its acidic form as proposed by the applicant, since this method step results in a liquid formulation with a low salt content (see application, page 6, lines 25-28, example 1 and page 1, lines 23-26). Although document **D1** already discloses the production of corresponding liquid formulations from an isolated azo dye in its acidic form, it does not appear to be directed to the production of low-salt liquid formulations, since the salt load of the liquid formulations is not mentioned in **D1**. For this reason, it is not certain that the cited prior art suggests the combination of (i) coupling diazotized amino sulfonic acids (I) with vesuvin and (ii) isolating the dyes in their acidic forms and then dissolving them in aqueous bases, as according to the present claim 1, for the purpose of arriving at an improved production method for liquid formulations of salts of sulfonic acid azo dyes. As a result, the subject matter for which protection is sought according to claims 1-6 appears to involve an inventive step.